

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
23 May 2002 (23.05.2002)

PCT

(10) International Publication Number
WO 02/41597 A2

(51) International Patent Classification⁷: **H04L 29/00**

(21) International Application Number: **PCT/GB01/05058**

(22) International Filing Date:
16 November 2001 (16.11.2001)

(25) Filing Language: **English**

(26) Publication Language: **English**

(30) Priority Data:
09/715,558 17 November 2000 (17.11.2000) **US**

(71) Applicant (for all designated States except US): **IPWIRE-
LESS, INC.** [US/US]; 1001 Bayhill Drive, 2nd Floor, San
Bruno, CA 94066 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **JONES, William,**

John [GB/GB]; Meadow Vale, Dauntsey, Chippen-
ham SN15 4JH (GB). **WILLIAMS, Andrew, Gordon**
[GB/GB]; 79 Ashford Road, Swindon SN1 3NT (GB).
BOWRING, Michael [GB/GB]; Church Cottage, Bussage
Hill, Bussage, Stroud GL6 8AY (GB).

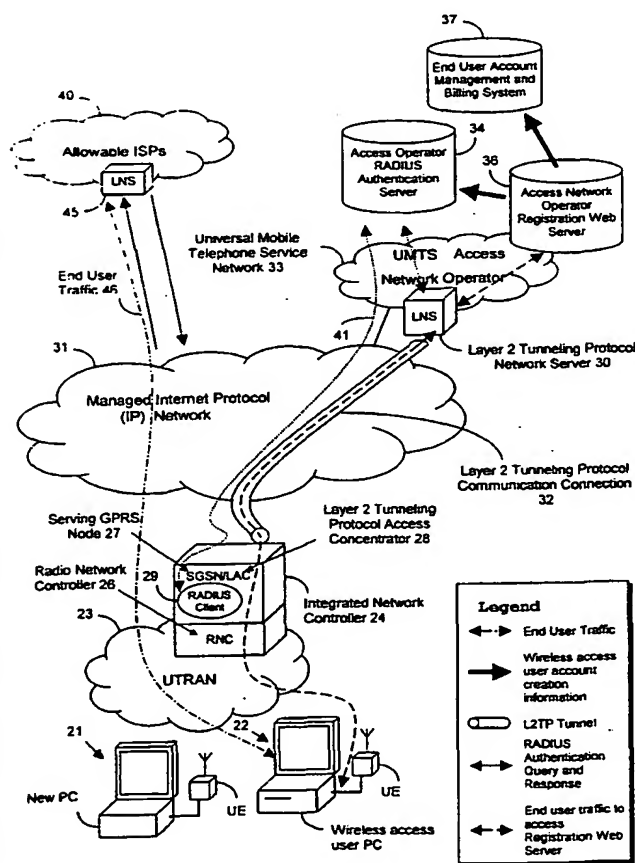
(74) Agent: **HUDSON, Peter;** InetIP, 121 Blackberry Lane,
Four Marks, Alton, Hampshire GU34 5DJ (GB).

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU,
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,
CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM,
HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK,
LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX,
MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL,
TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

(84) Designated States (*regional*): ARIPO patent (GH, GM,
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),

[Continued on next page]

(54) Title: **USE OF INTERNET WEB TECHNOLOGY FOR WIRELESS INTERNET ACCESS**



(57) Abstract: Internet web technology is used to allow a wire-
less Internet customer to acquire a virtual subscriber identity
module (VSIM) in an anonymous session connection and then
transfer the VSIM to any other desired PC (personal computer).

WO 02/41597 A2

BEST AVAILABLE COPY



Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)*
- *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EE,*

ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

- *of inventorship (Rule 4.17(iv)) for US only*

Published:

- *without international search report and to be republished upon receipt of that report*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

- 1 -

**USE OF INTERNET WEB TECHNOLOGY FOR
WIRELESS INTERNET ACCESS**

5 RELATED APPLICATIONS

U.S. patent application Serial No. 09/626,699, filed July 27, 2000, entitled "USE OF INTERNET WEB TECHNOLOGY TO REGISTER WIRELESS ACCESS CUSTOMERS" which is a
10 continuation-in-part of U.S. patent application Serial No. 09/432,824, filed November 2, 1999, entitled, "CELLULAR WIRELESS INTERNET ACCESS SYSTEM USING SPREAD SPECTRUM AND INTERNET PROTOCOL (IP)", and published in equivalent form as European patent publication EP1098539.

15

INTRODUCTION

The present invention is directed to the use of Internet
20 web technology for wireless customer Internet access and specifically to allow authenticated Internet access for more than one personal computer.

25 BACKGROUND OF THE INVENTION

Both of the above applications describe a cellular wireless Internet access system which operates in the 2 gigahertz or other frequency bands to provide high data
30 rates to fixed and portable wireless Internet devices. Such users connect to near-by base stations which in turn communicate to Integrated Network Controllers which are then connected to the Internet. Such wireless

- 2 -

implementation relates to an access network of the UMTS (Universal Mobile Telephone Service) and its subset UTRAN (Universal Terrestrial Radio Access Network) standards.

5 In order to gain service in a cellular wireless network of the types similar to the above, a sales representative at a retail location typically takes customer information, credit card number and credit history, etc.

That information is used to create an account with a
10 cellular service provider, with the customer information stored on the service provider's Home Location Register (HLR) or other customer database. A SIM (Subscriber Identity Module) card is then associated with the account and placed within the cellular terminal (typically, a
15 mobile phone or wireless Internet device).

Both of the above techniques are cumbersome, requiring action on the part of the retailer or network service provider, and creating a time delay before a new customer
20 can use the service.

U.S. patent application Serial No. 09/626,699, allows the user to self-register to gain access to Internet services for the wireless system as above. It is, however, also
25 desired to allow authenticated access to be provided for various user access units.

SUMMARY OF INVENTION

30

In accordance with a first aspect of the invention, there is provided a method of operation in a wireless access network system, as claimed in claim 1.

- 3 -

In accordance with a second aspect of the invention, there is provided a wireless user equipment arrangement for use with a wireless access network system, as claimed
5 in claim 12.

In accordance with a third aspect of the invention, there is provided a computer program element, as claimed in claim 13.

10

In accordance with a fourth aspect of the invention, there is provided a virtual subscriber identity module for use with wireless user equipment in a wireless access network system, as claimed in claim 14.

15

In a preferred form of the invention, there is provided a method of operating a cellular wireless Internet access system as part of an Internet Network where users have personal computers (PCs) and each user utilizes a
20 portable user equipment (UE) typically with a directly attached antenna for communicating in a wireless manner on a cellular network with an integrated network controller, the UE being connected to the PC, the network having a registration web server and an access operator
25 authentication server. The method comprises the following steps:

A PC and associated UE are used to register with a registration web server on the Internet Network via an anonymous connection to the network including downloading
30 subscriber identity information from the registration web server to the PC via the UE for storage in the PC. The subscriber identity information includes, at least, a unique user identification (user ID) and a permanent

- 4 -

password. Such stored information constitutes a virtual subscriber identity module (VSIM). The access operator authentication server is updated with the user ID and password. The user may then be connected to an allowable Internet service provider (ISP) using the VSIM. Another PC may be used by transferring electronically the user ID and password to the other PC, said transfer including one of the following; temporary transfer to portable magnetic storage means, a local area network (LAN) or e-mail attachments, or similar electronic transfer.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a block diagram of an Internet system illustrating the present invention.

FIG. 2 is a schematic block diagram illustrating the present invention.

FIG. 3 is a flowchart showing the operation of the invention.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENT

Referring now to FIG. 1, there is illustrated a wireless access user 22 with user equipment (UE) connected by typical data connection to the personal computer (PC). The personal computer has a CD drive or similar media input device with a special compact disc containing software, including a wizard (that is the instructional system procedures for registration) which is placed in

- 5 -

the CD drive. In addition, a second PC and UE 21 is illustrated (designated 'new PC'), whose function in the Internet Network system shown in FIG. 1 will be described below.

5

Both the UE and CD of system 22 are acquired and purchased at some retail location or by mail. This is described more fully in the above '699 application involving registration. PC 22 and its associated UE as
10 described in the above U.S. patent application Serial No. 09/432,824, are a part of a UMTS/UTRAN system which by many wireless techniques (a specific novel one is described in the above application) communicates in a wireless manner via a UTRAN network as indicated by the
15 symbol 23 to an Integrated Network Controller (INC) 24. Such controller may be connected by wireline or otherwise to an Internet Protocol (IP) Network 31. As discussed in the above pending application, the Integrated Network Controller 24 includes an RNC or Radio Network
20 Controller 26 which controls and allocates the radio network resources and provides reliable delivery of user traffic between a base station (described in the above pending application) and User Equipment (UE) and eventually the Integrated Network Controller (INC) 24.
25 An SGSN (Serving General Packet Radio Service Support Node) 27 provides session control and connection to the Access Operator Radius Authentication Server 34. Lastly, LAC 28 (layer 2 Tunneling Protocol Access Concentrator) provides the gateway functionality to the allowable
30 Internet Service Providers (ISP) 40 and to the registration server 36. A Layer 2 Tunneling Protocol Network Server (LNS) 30 terminates communication tunnels from the LAC through the IP network. The Access Operator

- 6 -

Radius Authentication Server 34 supports the Home Location Register (HLR) functionality (described in the above pending application). The Access Operator Registration Server 36 provides the facilities for a new user to register.

The Integrated Network Controller 24 also illustrates that it incorporates a "RADIUS" client 29. RADIUS is a system including the software that supports centralized access control for Internet access, which, as discussed above, is traditionally used where the access to the Internet is via the public switched telephone network. A description of RADIUS is provided by an article RFC 2138 Remote Authentication Dial-in User Service (RADIUS) by C. Rigney, et al., April 1997, which is available at the website WWW.IETF.ORG.

In all cases of communication of a user equipment 21 or 22 through the Internet Protocol Network, illustrated as 31, authentication is performed by the user equipment (UE) signaling the customer's wireless access authentication information which is passed over the air to Integrated Network Controller 24 which queries a RADIUS server authentication server with the user ID (identification) and temporary password. The RADIUS server used is the Access Operator's RADIUS Authentication Server 34 which communicates with the Integrated Network Controller via the IP network using UDP/IP protocols with additional protocol layers for security.

In the case of a new user, a 'new user' ID and temporary password, preprogrammed in the CD software, is signaled

- 7 -

to the Access Operator RADIUS Authentication Server 34 via the INC 24. The Access Operator RADIUS Authentication Server 34 recognizes the user as a 'new user' and communicates a set of protocol filters to the
5 INC 24 that results in a PPP (Point-to-Point Protocol) session being set up between the User's PC and the Access Operator's Registration Server 36 via the Layer 2 Tunneling Protocol communication link 32 and bars the user from accessing any other service. The Access
10 Operator's Registration Server 36 is connected to the subscriber account management and billing system 37.

Thus, the foregoing constitutes the anonymous session link where a general or non-authenticated user can still
15 gain access to the wireless access operator's registration server for the purpose of new-user registration. The accompanying legend indicates the various paths. A UMTS access network operator 33 provides the special servers 34 and 36 along with the
20 billing system 37.

The flow chart of FIG. 3 describes in somewhat truncated detail the registration procedure set out in greater detail in the above co-pending '699 application. After
25 "START" in Step 1, the user purchases the user equipment UE which may or may not have a particular unique identification number (ID) and a CD with the appropriate software and wizard feature installed on it. This is connected to the PC. Next in Step 2, the user equipment
30 is installed on the PC via the wizard instructions on the CD, along with a new user ID and temporary password which were contained on the CD. These are then sent to the UE. The UE sends this authentication information over the

- 8 -

air to the RNC 26, which is passed onto the RADIUS Client 29 and the SGSN 27 which queries the RADIUS server 34 with a new user ID and temporary new user password. In effect, an anonymous connection using the temporary
5 password is made on the Internet and as described in the above co-pending application, a permanent password is generated along with a user ID. As indicated in Step 3, this is stored in the PC memory of the unit 22. Thus, the permanent password and ID which have been
10 electronically stored in the PC memory (which may be a randomly accessible memory or floppy disk or hard disk) form a virtual subscriber identity module or VSIM. At the same time (Step 6), the RADIUS server 34 is updated with the user's name and permanent password to provide
15 subsequent access to allowable ISPs 40, as illustrated in FIG. 1. Thus, as described in the above co-pending application, access has been gained to the Internet Network on a special anonymous connection. Thus, as described in Step 4, connection may now be made to
20 allowable Internet service providers (ISPs) using the VSIM user information via the Layer 2 Tunneling Network Server (LNS) 45 of the allowable ISPs 40. This route is shown in a dotted/dashed line designated End User Traffic 46.

25
With the VSIM, in accordance with the present invention, as shown in Step 6, a user may electronically transfer the subscriber identity information to a new or another PC, for example, indicated as 21 in FIG. 1. This is
30 illustrated in FIG. 2 where the original PC 22 with the VSIM subscriber identity module information indicated in dashed outline transfers the VSIM information via one of the following electronic techniques so designated: floppy

- 9 -

disk, LAN (Local Area Network), e-mail attachment or other electronic means. Thus, the new PC 21 contains the VSIM information so designated in the dashed block as VSIM' and may access the Internet Network. Optionally, 5 if as part of the VSIM or subscriber identity information, the unique identification or ID of the original associated UE with PC 22 is part of the VSIM information, then as shown by the optional line 47 the original or old UE must be transferred to the new PC 21.

10 This prevents use by more than one subscriber; in other words, it is further protection against fraud. However, this is not necessary if the user equipment ID is not a part of the required VSIM information.

15 Thus, with the foregoing the new PC 21 may now access the Internet Network. In summary the VSIM may manifest itself as the file on the hard disk of the personal computer being used for Internet Access, or as an alternative, be stored on a floppy disk or other

20 removable media. In the case of the VSIM being stored on a floppy disk the end user may take that disk to a new or different computer connected to a new or different UE and gain wireless access to the Internet. Moreover, if the VSIM information is not encrypted, it can be retrieved

25 and manually recorded by the user for transfer to another computer.

Authentication and accounting is provided for against the identifying information of their VSIM. Other typical

30 functions of a subscriber identity module (SIM) may be provided in addition to the unique ID, a customer password, and UE equipment identifier. This may include storage of an access network operator name, an Internet

- 10 -

service provider name, encryption of all of the above data, provision of all of the above data on demand to associated subscriber equipment to an access network operator, or on demand to an ISP.

5

In conclusion, with the use of the VSIM as described above in a mobile or portable wireless system, such information is transportable in this electronic format from one computer to another. Moreover, it is stored in
10 the user's PC or personal computer rather than the separate user equipment or subscriber unit (such as a cellular telephone).

- 11 -

WHAT IS CLAIMED IS:

1. A method of operation in a wireless access network system, comprising the steps of:

- 5 a) a user establishing an anonymous communication session communicating with the network via wireless user equipment using a predetermined temporary ID and predetermined temporary password;
- 10 b) the user, in the anonymous communication session, registering with a registration server arrangement;
- c) the registration server arrangement passing to the user a permanent ID and permanent password
- 15 for use by the user to subsequently access the system; and
- d) the permanent ID and permanent password passed from the registration server being stored, at computer means to which the user equipment is
- 20 connected, in the form of a virtual subscriber identity module which may be used for subsequent access from the computer means or transferred to another computer means for subsequent access therefrom.

25

2. The method of claim 1 wherein steps of the method are performed by the user running a predetermined software program on the computer means to which the user equipment is connected, and the method further comprises
- 30 a step of transferring the virtual subscriber identity module to another computer means for subsequent access therefrom.

- 12 -

3. The method of claim 2 wherein the software program resides on a portable data carrier which is inserted at the computer means.

5 4. The method of claim 2 wherein the virtual subscriber identity module is transferred electronically.

5. The method of claim 4 wherein the virtual subscriber identity module is transferred via one of:

10 portable data carrier;
local area network; and
e-mail.

6. The method of any preceding claim wherein the system
15 is a cellular wireless Internet access system.

7. The method of any preceding claim wherein the registration server arrangement comprises a server operating in the RADIUS standard.

20

8. The method of any preceding claim wherein the user equipment is portable, wherein registration may be effected without prior registration formalities.

25 9. The method of any preceding claim wherein the system is a UMTS system.

10. The method of claim 9 wherein the system is a UTRAN system.

30

- 13 -

11. The method of any preceding claim wherein the virtual subscriber identity module comprises at least one of:

- an identifier unique to the user equipment;
- 5 a customer password;
- an access network operator identifier; and
- an Internet service provider identifier,

12. A wireless user equipment arrangement for use with a wireless access network system, the arrangement comprising:

- wireless user equipment; and
- a data carrier holding a software program for running on a computer to establish an anonymous
- 15 communication session via a temporary ID and temporary password and to store a permanent ID and a permanent password in a virtual subscriber identity module, for a user to use the system by the method of any one of claims 1 to 11.

20

13. A computer program element comprising computer program means for establishing an anonymous communication session via a temporary ID and temporary password and for storing a permanent ID and a permanent password in a

25 virtual subscriber identity module, for a user to use a wireless access network system by the method of any one of claims 1 to 11.

- 14 -

14. A virtual subscriber identity module for use with wireless user equipment in a wireless access network system, the virtual subscriber identity module containing at least a permanent data ID and a permanent password,
5 obtained by the method of any one of claims 1 to 11, for use with computer means to allow a user to use the system.

- 15 -

15. A method of operating a cellular wireless Internet access system as part of an Internet Network where users have personal computers (PCs) and each user utilizes a portable user equipment (UE) typically with a directly
5 attached antenna for communicating in a wireless manner on a cellular network with an integrated network controller, the UE being connected to the PC, said network having a registration web server and an access operator authentication server, the method comprising the
10 following steps:

using a said PC and associated UE to register with said registration web server on said Internet Network via an anonymous connection to said network including downloading subscriber identity information from said
15 registration web server to said PC via said UE for storage in said PC, said subscriber identity information including, at least, a unique user identification (user ID) and a permanent password, such stored information constituting a virtual subscriber identity module (VSIM);

20 updating said access operator authentication server with said user ID and password;

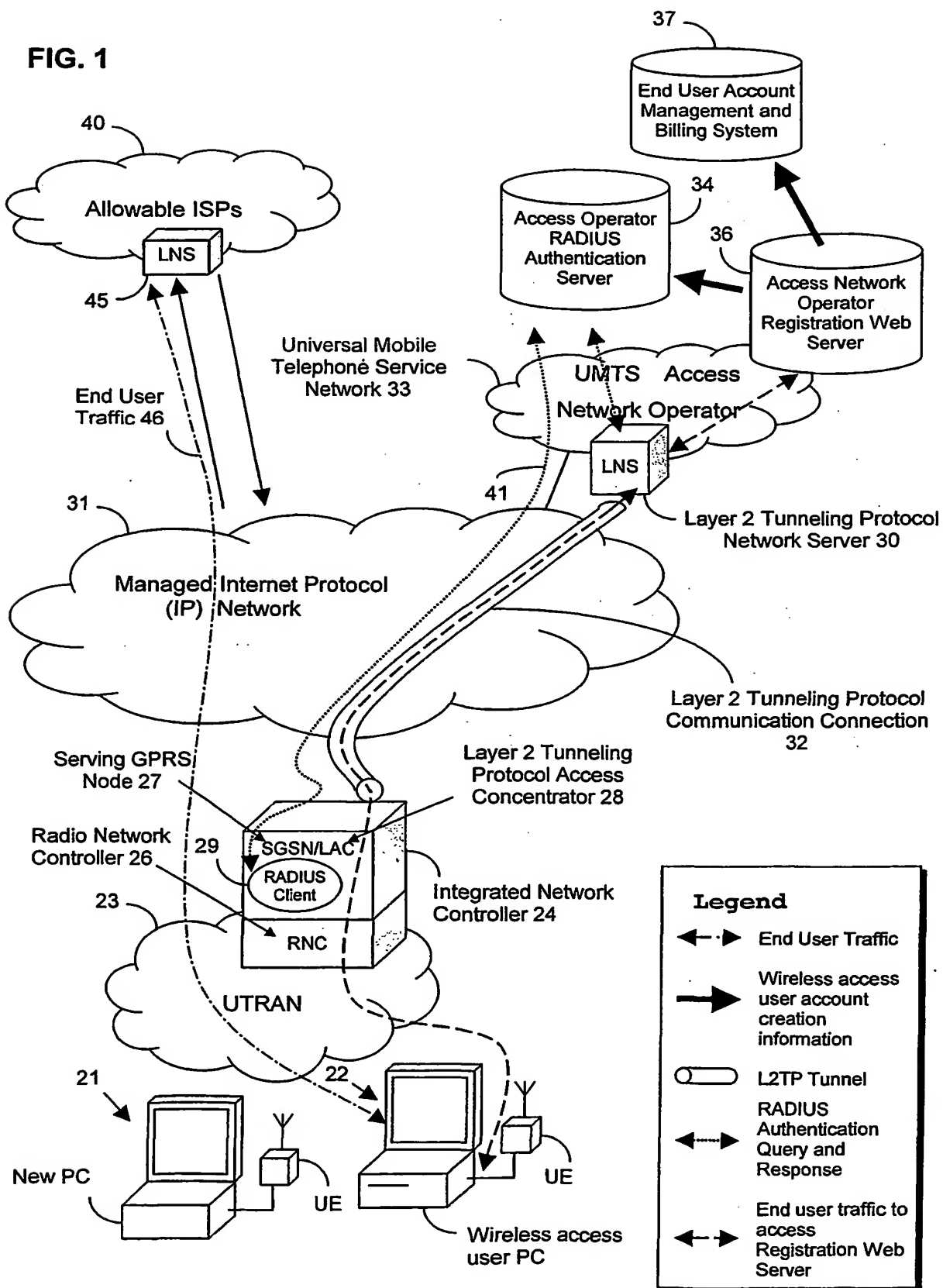
connecting to an allowable Internet service provider (ISP) using said VSIM; and

transferring electronically said user ID and
25 password to another PC, said transfer including one of the following; temporary transfer to portable magnetic storage means, a local area network (LAN) e-mail attachment, or similar electronic transfer.

- 16 -

16. A method as in claim 15 where said UE has a unique
ID and is included as part of said subscriber identity
information whereby the original associated UE is
connected to said another PC to enable an Internet
5 session.

FIG. 1



2/3

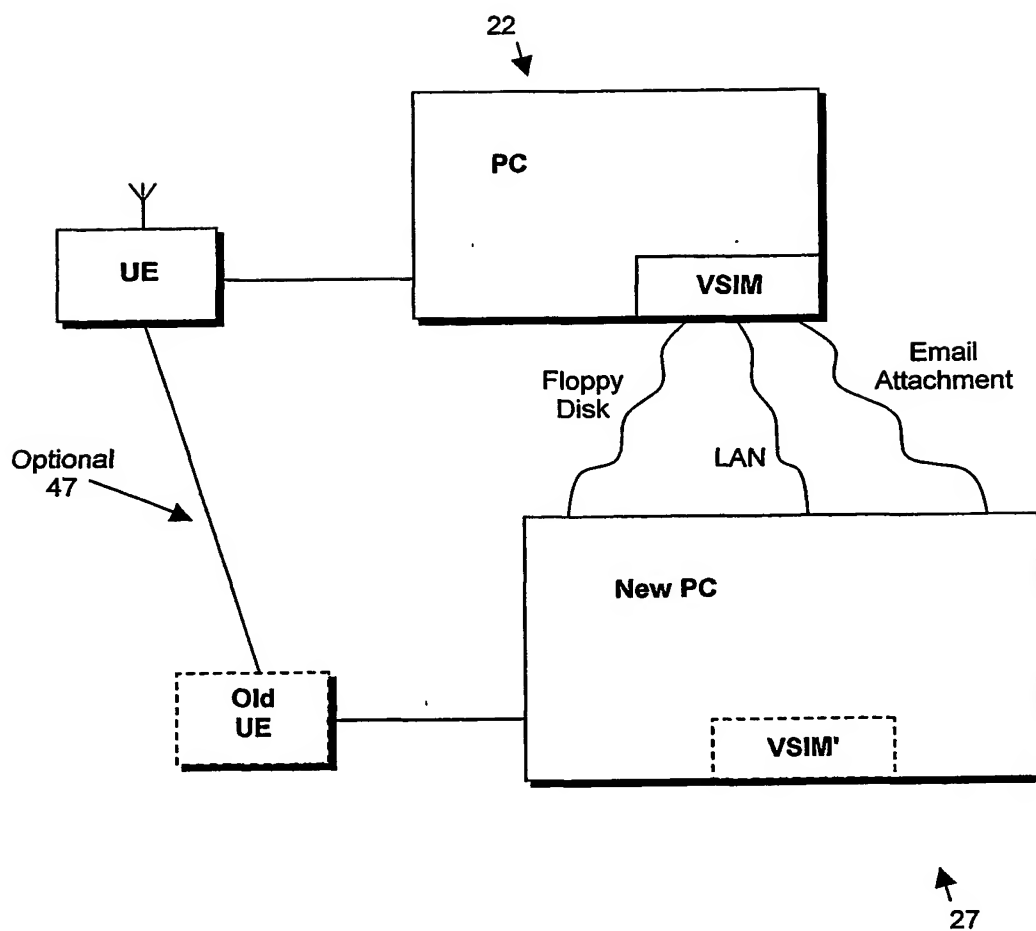


FIG. 2

3/3

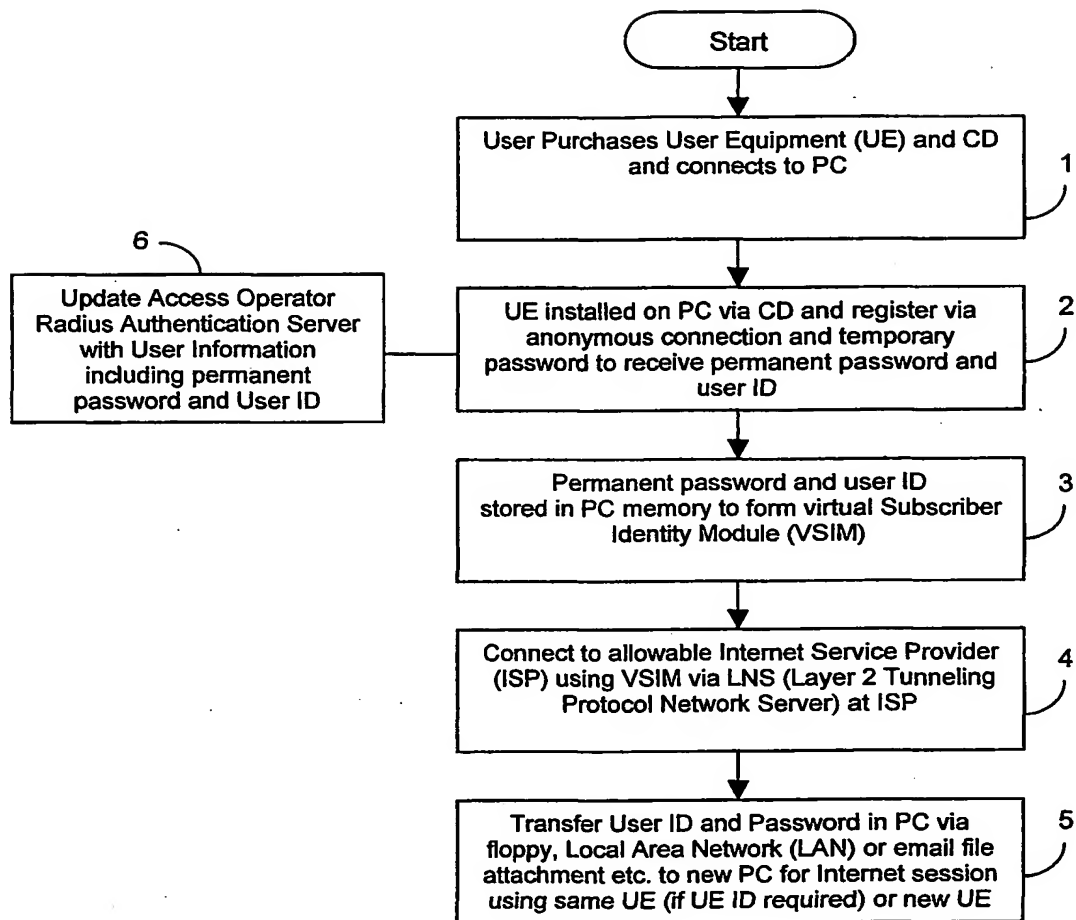


FIG. 3

THIS PAGE BLANK (USPTO)

**(19) World Intellectual Property Organization
International Bureau**



(43) International Publication Date
23 May 2002 (23.05.2002)

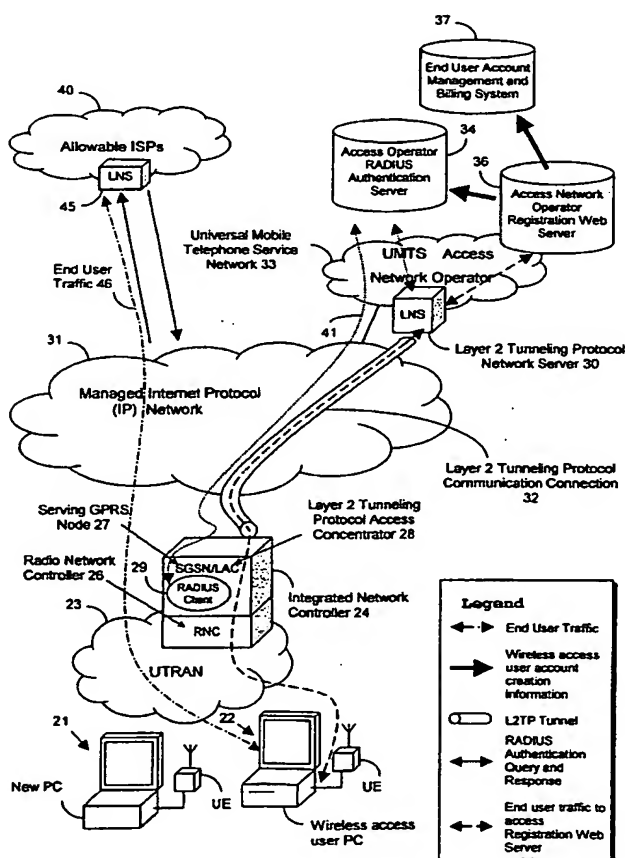
(10) International Publication Number
WO 02/041597 A3

PCT

- | | | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>(51) International Patent Classification⁷:
H04Q 7/38</p> | <p>H04L 29/06,</p> | <p>(72) Inventors; and
(75) Inventors/Applicants (for US only): JONES, William, John [GB/GB]; Meadow Vale, Dauntsey, Chippenham SN15 4JH (GB). WILLIAMS, Andrew, Gordon [GB/GB]; 79 Ashford Road, Swindon SN1 3NT (GB). BOWRING, Michael [GB/GB]; Church Cottage, Bussage Hill, Bussage, Stroud GL6 8AY (GB).</p> |
| <p>(21) International Application Number:</p> | <p>PCT/GB01/05058</p> | |
| <p>(22) International Filing Date:</p> | <p>16 November 2001 (16.11.2001)</p> | |
| <p>(25) Filing Language:</p> | <p>English</p> | <p>(74) Agent: HUDSON, Peter; InetIP, 121 Blackberry Lane, Four Marks, Alton, Hampshire GU34 5DJ (GB).</p> |
| <p>(26) Publication Language:</p> | <p>English</p> | |
| <p>(30) Priority Data:
09/715,558 17 November 2000 (17.11.2000)</p> | <p>US</p> | <p>(81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.</p> |
| <p>(71) Applicant (for all designated States except US): IPWIRELESS, INC. [US/US]; 1001 Bayhill Drive, 2nd Floor, San Bruno, CA 94066 (US).</p> | | |

[Continued on next page]

- (54) Title:** USE OF INTERNET WEB TECHNOLOGY FOR WIRELESS INTERNET ACCESS



- (57) Abstract:** Internet web technology is used to allow a wireless Internet customer to acquire a virtual subscriber identity module (VSIM) in an anonymous session connection and then transfer the VSIM to any other desired PC (personal computer).



- (84) **Designated States (regional):** ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY,

BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

- of inventorship (Rule 4.17(iv)) for US only

Published:

- with international search report

- (88) **Date of publication of the international search report:**
21 November 2002

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 01/05058

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 H04L29/06 H04Q7/38

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H04Q H04L G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0 817 518 A (AT & T CORP) 7 January 1998 (1998-01-07) abstract column 1, line 44 -column 2, line 33	1-16
A	EP 0 917 328 A (LUCENT TECHNOLOGIES INC) 19 May 1999 (1999-05-19) paragraph '0157! - paragraph '0176!	1-16
A	WO 99 15960 A (CHODORONEK MARK A ;DEROSE ERIC (US); BARRY B REILLY (US); GONZALES) 1 April 1999 (1999-04-01) abstract page 36, line 27 -page 37, line 7 page 40, line 34 -page 41, line 31	1-16

☐ Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

* Special categories of cited documents :

A document defining the general state of the art which is not considered to be of particular relevance

E earlier document but published on or after the international filing date

L document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

O document referring to an oral disclosure, use, exhibition or other means

P document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

& document member of the same patent family

Date of the actual completion of the international search

30 August 2002

Date of mailing of the international search report

06/09/2002

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax (+31-70) 340-3016

Authorized officer

Bertolissi, E

INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 01/05058

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
EP 0817518	A	07-01-1998	US 5736932 A	07-04-1998
			CA 2200508 A1	03-01-1998
			EP 0817518 A2	07-01-1998
			JP 10066158 A	06-03-1998
EP 0917328	A	19-05-1999	US 6421714 B1	16-07-2002
			CA 2249817 A1	14-04-1999
			CA 2249830 A1	14-04-1999
			CA 2249831 A1	14-04-1999
			CA 2249836 A1	14-04-1999
			CA 2249837 A1	14-04-1999
			CA 2249838 A1	14-04-1999
			CA 2249839 A1	14-04-1999
			CA 2249862 A1	14-04-1999
			CA 2249863 A1	14-04-1999
			EP 0912026 A2	28-04-1999
			EP 0910198 A2	21-04-1999
			EP 0917320 A2	19-05-1999
			EP 0917318 A2	19-05-1999
			EP 0912027 A2	28-04-1999
			EP 0912012 A2	28-04-1999
			EP 0917328 A2	19-05-1999
			EP 0918417 A2	26-05-1999
			EP 0912017 A2	28-04-1999
			JP 11289353 A	19-10-1999
			JP 11252183 A	17-09-1999
			JP 11275154 A	08-10-1999
			JP 11275155 A	08-10-1999
			JP 2000022758 A	21-01-2000
			JP 11275156 A	08-10-1999
			JP 11275157 A	08-10-1999
			JP 11284666 A	15-10-1999
			JP 11331276 A	30-11-1999
			US 6414950 B1	02-07-2002
			US 6377982 B1	23-04-2002
			US 6400722 B1	04-06-2002
			US 2002089958 A1	11-07-2002
			US 6393482 B1	21-05-2002
WO 9915960	A	01-04-1999	AU 1062499 A	12-04-1999
			AU 9582798 A	12-04-1999
			AU 9582998 A	12-04-1999
			AU 9583198 A	12-04-1999
			AU 9583298 A	12-04-1999
			AU 9583398 A	12-04-1999
			AU 9583598 A	12-04-1999
			AU 9583698 A	12-04-1999
			AU 9584098 A	12-04-1999
			AU 9666398 A	12-04-1999
			AU 9667198 A	12-04-1999
			AU 9667298 A	12-04-1999
			AU 9667598 A	12-04-1999
			AU 9667698 A	12-04-1999
			AU 9667898 A	12-04-1999
			AU 9667998 A	12-04-1999
			AU 9668098 A	12-04-1999
			AU 9668298 A	03-05-1999
			AU 9777098 A	12-04-1999

INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 01/05058

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9915960	A	AU 9777298 A	12-04-1999
		AU 9777398 A	12-04-1999
		BR 9814046 A	02-01-2002
		BR 9814049 A	20-11-2001
		BR 9814050 A	13-11-2001
		CA 2304543 A1	22-04-1999
		CA 2304554 A1	01-04-1999
		CA 2304619 A1	01-04-1999
		EP 1015995 A1	05-07-2000
		EP 1015970 A2	05-07-2000
		EP 1015986 A1	05-07-2000
		WO 9915984 A1	01-04-1999
		WO 9915960 A2	01-04-1999
		WO 9916230 A1	01-04-1999
		WO 9915974 A1	01-04-1999
		WO 9915975 A1	01-04-1999
		WO 9916206 A1	01-04-1999
		WO 9916198 A1	01-04-1999
		WO 9915977 A1	01-04-1999
		WO 9916207 A1	01-04-1999
		WO 9915988 A2	01-04-1999
		WO 9915996 A2	01-04-1999
		WO 9916002 A1	01-04-1999
		WO 9915950 A1	01-04-1999
		WO 9916218 A1	01-04-1999
		WO 9916099 A2	01-04-1999
		WO 9915989 A1	01-04-1999
		WO 9915978 A1	01-04-1999
		WO 9915979 A1	01-04-1999
		WO 9916202 A2	01-04-1999
		WO 9919803 A1	22-04-1999

THIS PAGE BLANK (USPTO)

**This Page is Inserted by IFW Indexing and Scanning
Operations and is not part of the Official Record**

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☐ BLACK BORDERS
- ☐ IMAGE CUT OFF AT TOP, BOTTOM OR SIDES
- ☒ FADED TEXT OR DRAWING
- ☒ BLURRED OR ILLEGIBLE TEXT OR DRAWING
- ☐ SKEWED/SLANTED IMAGES
- ☐ COLOR OR BLACK AND WHITE PHOTOGRAPHS
- ☐ GRAY SCALE DOCUMENTS
- ☒ LINES OR MARKS ON ORIGINAL DOCUMENT
- ☐ REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY
- ☐ OTHER: _____

IMAGES ARE BEST AVAILABLE COPY.

As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.

THIS PAGE BLANK (USPTO)